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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/972,365	10/05/2001	Ulrich Bungert	071308.0419	4730

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EXAMINER

MASKULINSKI, MICHAEL C

ART UNIT	PAPER NUMBER
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2113

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/972,365

Applicant(s)

BUNGERT ET AL.

Examiner

Michael C. Maskulinski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 7 and 14-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Non-Final Office Action

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-6 and 8-13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 1-6 and 8-13 are directed to non-functional descriptive material. Descriptive material that cannot exhibit any functional interrelationship with the way in which computing processes are performed does not constitute a statutory process, machine, manufacture or composition of matter. A human being can do all the steps of the Applicant's method, and the Applicant's claims are nothing more than mere arrangements of data such as the process of writing a program.

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-6 and 8-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Lenz et al., US 2001/0032025 A1.

Referring to claim 1:

- a. In paragraph 0023, Lenz et al. disclose processor sensors that comprise any device suitable for measuring a process variable, such as temperature, pressure, motion, direction, rate of change, and the like and a process machine (identifying components and sensors in the system).

- b. In paragraph 0023, Lenz et al. disclose that the process controller receives a measurement (receiving outputs from said sensors) of a process variable (identifying inputs to each identified component), from a process sensor.
- c. In paragraph 0009, Lenz et al. disclose a similarity search engine for similarity searching the measurement against the process attribute information stored in the databases, a means for assigning a similarity search score to the measurement (determining weight values for a possible fault condition for each component based on said functional relationship).
- d. In paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level (determining functional relationships between the inputs and outputs for each identified component; and determining the most likely fault condition from said possible fault conditions based on said weight values).

Referring to claim 2, in paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity

score to a match tolerance level. Further, in paragraph 0026, Lenz et al. disclose that when the similarity score is below the match tolerance level, then the process controller may determine that the measurement received is inaccurate (using the identified inputs and outputs of a specific component and sensors and the functional relationships of a corresponding generic component to identify a possible fault condition).

Referring to claim 3, in paragraph 0028, Lenz et al. disclose that process attribute information is stored in a plurality of disparate databases. The databases may comprise process variable databases, condition monitoring databases, process machine attribute databases, etc. (defining component libraries that describe the functional relationships of the generic components).

Referring to claim 4, in paragraph 0024, Lenz et al. disclose that the similarity searching may be performed by a similarity search engine (SSE) that resides on the process controller (creating a diagnostic program from the functional relationships of the generic components associated with each component).

Referring to claim 5, in paragraph 0026, Lenz et al. disclose that it is determined whether the similarity score meets or exceeds the match tolerance level. Where the similarity score is below the match tolerance level, then the process controller may determine that the measurement received is inaccurate (transforming the functional relationships into fault conditions).

Referring to claim 6, in paragraph 0009, Lenz et al. disclose a similarity search engine for similarity searching the measurement against the process attribute information stored in the databases, a means for assigning a similarity search score to

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the measurement, a means for comparing the similarity search score to a match tolerance level (the step of transforming is implemented in an off-line phase during which the diagnostic program is created, and an on-line phase during which available inputs and outputs are supplied to the transformed functional relationships in the control program, to identify fault conditions).

Referring to claims 8 and 13, in paragraph 0047, Lenz et al. disclose that process machine monitoring variables may comprise any variables that can be related physically or mathematically to machine condition or performance. Process machine monitoring variables may include, for example, vibration, shaft alignment, bearing temperature, motor current, flux data, etc. (the step of including state information for at least one of the components to define the state of the component at a different time).

Referring to claim 9:

- a. In paragraph 0023, Lenz et al. disclose processor sensors that comprise any device suitable for measuring a process variable, such as temperature, pressure, motion, direction, rate of change, and the like and process machines (identifying the functional elements and associated sensors in the system).
- b. In paragraph 0023, Lenz et al. disclose that the process controller receives a measurement (receiving outputs from said associated sensors) of a process variable (defining inputs for each of the functional elements), from a process sensor.
- c. In paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process

measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level (determining functional relationships between the inputs and outputs for each functional element).

d. In paragraph 0060, Lenz et al. disclose that the invention may be implemented using standard programming or engineering techniques including computer programming software, firmware, hardware or any combination or subset thereof (expressing the functional relationships using a programming language).

e. In paragraph 0009, Lenz et al. disclose a similarity search engine for similarity searching the measurement against the process attribute information stored in the databases, a means for assigning a similarity search score to the measurement (determining weight value for a possible fault condition for each functional element based on said functional relationship).

f. In paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level (determining the most

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likely fault condition from said possible fault conditions based on said weight values).

Referring to claim 10, in paragraph 0060, Lenz et al. disclose that the invention may be implemented using standard programming or engineering techniques including computer programming software, firmware, hardware or any combination or subset thereof (wherein the programming language is a symbolic language).

Referring to claim 11, in paragraph 0028, Lenz et al. disclose that process attribute information is stored in a plurality of disparate databases. The databases may comprise process variable databases, condition monitoring databases, process machine attribute databases, etc. (defining functional relationships for at least some of the functional elements includes utilizing a component library that defines the functional relationships between inputs and outputs of at least one generic element).

Referring to claim 12, in paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level. Further, in paragraph 0026, Lenz et al. disclose that when the similarity score is below the match tolerance level, then the process controller may determine that the measurement received is inaccurate (the step of defining the functional relationships includes the step of defining functional relationships and inputs

and outputs of the generic elements corresponding to the functional elements in the system).

5. Claims 1-5 and 9-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Ramadei et al., US 2002/0166082 A1.

Referring to claim 1:

- a. In paragraph 0014, Ramadei et al. disclose sensors that detect the performance of modules (identifying components and sensors in the system).
- b. In paragraph 0014, Ramadei et al. disclose that the sensors thus detect the performance of the modules and the embedded controllers store the modules' performance as log files (identifying inputs to each identified component and receiving outputs from said sensors).
- c. In paragraph 0020, Ramadei et al. disclose that filters represent actual and/or potential fault patterns, and/or error codes. A module produces a result file delineating which filters (which represent fault patterns) and error codes (which represent faults) were found and a degree of importance/relevance (determining weight values for a possible fault condition for each component based on said functional relationship).
- d. In paragraph 0016, Ramadei et al. disclose that filter parameters are used to construct filters where the parameters correlate to various machines and module behavior patterns or signatures (determining functional relationships between the inputs and outputs for each identified component; and determining

the most likely fault condition from said possible fault conditions based on said weight values).

Referring to claim 2, in paragraph 0016, Ramadei et al. disclose that filters and filter parameters are determined by one or more individuals, who are familiar with the operation and performance expectations of a machine and its internal modules (using the identified inputs and outputs of a specific component and sensors and the functional relationships of a corresponding generic component to identify a possible fault condition).

Referring to claim 3, in paragraph 0016, Ramadei et al. disclose that filter parameters are unique to each type of module and are structured to note any deviations from a known performance requirement of a module (defining component libraries that describe the functional relationships of the generic components).

Referring to claim 4, in paragraph 0016, Ramadei et al. disclose creating a fault tree (creating a diagnostic program from the functional relationships of the generic components associated with each component).

Referring to claim 5, in paragraph 0016, Ramadei et al. teach transforming the functional relationships into fault conditions.

Referring to claim 9:

- a. In paragraph 0014, Ramadei et al. disclose sensors that detect the performance of modules (identifying the functional elements and associated sensors in the system).

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b. In paragraph 0014, Ramadei et al. disclose that the sensors thus detect the performance of the modules and the embedded controllers store the modules' performance as log files (defining inputs for each of the functional elements and receiving outputs from said associated sensors).

c. In paragraph 0020, Ramadei et al. disclose that filters represent actual and/or potential fault patterns, and/or error codes. A module produces a result file delineating which filters (which represent fault patterns) and error codes (which represent faults) were found and a degree of importance/relevance (determining weight values for a possible fault conditions for each functional element based on said functional relationship).

d. In paragraph 0016, Ramadei et al. disclose that filter parameters are used to construct filters where the parameters correlate to various machines and module behavior patterns or signatures (defining functional relationships between inputs and associated outputs for each functional element; and determining the most likely fault condition from said possible fault conditions based on said weight values).

e. In paragraph 0012, Ramadei et al. teach expressing the functional relationships using a programming language

Referring to claim 10, in paragraph 0012, Ramadei et al. disclose Microsoft Access (wherein the programming language is a symbolic language).

Referring to claim 11, in paragraph 0016, Ramadei et al. disclose that filter parameters are unique to each type of module and are structured to note any deviations

from a known performance requirement of a module (defining functional relationships for at least some of the functional elements includes utilizing a component library that defines the functional relationships between inputs and outputs of at least one generic element).

Referring to claim 12, in paragraph 0016, Ramadei et al. disclose that filter parameters are unique to each type of module and are structured to note any deviations from a known performance requirement of a module (the step of defining the functional relationships includes the step of defining functional relationships and inputs and outputs of the generic elements corresponding to the functional elements in the system).

Response to Arguments

6. Applicant's arguments filed August 1, 2005 have been fully considered but they are not persuasive.

7. The Examiner again requests that the Applicant make the record clear for the response given on December 9, 2004. In that response, on page 5, under the section Claim Rejections Under 35 U.S.C. §102, the Applicant gives support for the amendment as being on page 17, line 23 to page 18, line 8. This is not valid support considering the claims start on page 17 and the Abstract is on page 18. Having a clear record for the Application is important to future prosecution of the Application and therefore the Examiner requests that the Applicant indicate where support for the amendment is given to clear up any issues that the amendment is new matter.

8. On page 7, under the section Claim Rejections Under 35 U.S.C. §102, the Applicant argues, "Lenz is merely directed to the utilization of a 'similarity score' (Para. 0009) to determine whether a measurement received related to a parameter is within, i.e., 'similar enough' to process attribute information stored in the databases. If the measurement is similar enough, i.e., if the 'measurement' has 'an acceptable similarity' with the database information and is within a 'match tolerance level' that is 'set by the user' then the process proceeds (See Para. 0025 and 0026). If the 'similarity score is below the set match tolerance level, then the process controller may determine that the measurement received is inaccurate. The process controller then computes a process action, using a virtual variable, in accordance with step 207.' (Para. 0026)." The Examiner respectfully disagrees. The Examiner believes that the Applicant does not fully understand the invention and overall concept of the reference of Lenz et al. Lenz et al. deal with a control system for machines and a method for monitoring, controlling, and diagnosing process machines. Particularly, the invention relates to a system of data mining and comparison, using a similarity search engine to identify the degree of similarity between process-related objects and a process control machine (see paragraph 0002). Anyone who is familiar with data mining knows that it almost always requires some kind of weighting values. You have to find the most relevant data. In the invention of Lenz et al., measurements from sensors are taken as inputs. These measurements are then compared to a database and a similarity score (weighting value) is used to find an adjustment for the process (see paragraphs 0030 and 0031). Clearly the machine is not operating within its proper operating parameters (a fault

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condition) and needs to be adjusted. So, for example, a similarity score assigned to the measurement indicates that the machine is running too hot shown by the temperature sensor in paragraphs 0033 and 0034 (determining the most likely fault condition). In response, an adjustment is made according to the value in the database. A person that had a machine operating too hot wouldn't want to make it overheat.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Maskulinski whose telephone number is (571) 272-3649. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W. Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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